520.743.7554
info@computerdimensions.net
www.computerdimensions.net

5 Construction Technology Trends Shaping The Industry In 2021

New construction technology (Contech), is bringing major changes to construction management. Last year was a banner year for construction technology adoption. According to JLL's State of Construction Tech report, the coronavirus pandemic had a big impact on accelerating tech adoption in the construction industry in 2020. Per the findings, the rate of construction tech adoption reached in one year what normally would have occurred in a 3-year span.

It's evolving the way companies are planning their projects, conducting their daily operations, and supervising on-site work. The results are impressive, yielding higher levels of efficiency, accuracy, and safety. Reports such as the one performed by McKinsey, show that adopting digital technology boosts productivity in the industry by 15 percent on average.

Here are the top 5 construction technology solutions to watch in 2021.

## Collaborative And Mobile Software Solutions

Last year established that being able to communicate and share data in real time was vital to construction firms due to state-mandated shelter-in-place orders that led to many employees having to quickly adapt to working remotely. The need for collaborative software was already present in the construction industry, with the need to easily communicate information in real time between the office and the field, as well as with other stakeholders like architects, suppliers, building product manufacturers, building inspectors, and subcontractors.

Mobile technology has a particularly powerful impact on the field. Decisions often have to be made quickly in construction, so having access to the most up-to-date information is vital in order to avoid costly rework and keep projects on schedule and within budget. This is an area that already has strong adoption in the industry and collaborative software solutions allow multiple users to work together in real time to update data and complete tasks. It offers possibilities for real-time data collection and updates, communication between your on-site employees and back-office project managers, and overall streamlining of processes. Solutions that offer project management, planning, time tracking, and field reporting, among others, have brought new ways to work that are simply easier and more effective.

Building Information Modeling and Digital Twins

Building Information Modeling (BIM) is one of the most prominent construction technology trends in recent years. BIM is a process incorporating digital representations of the physical and functional aspects of a building that can lead to better collaboration during design and construction on projects. Outside of its use as a collaborative design tool, BIM is being used by contractors in prefabrication, takeoff and estimating, planning and scheduling, and clash detection. With BIM solutions such as Revit and AutoCAD Civil 3D, you can do much more than with traditional 2D paper designs. You can include additional layers of data in your 3D designs, such as construction specifications, pricing, lifecycle predictions, and performance scoring. This makes it a great tool not only for modeling and planning, but also for construction analysis, clash detection, and problem-solving.

BIM helps construction teams work better with real-time updates. Any changes that you make to the model are immediately visible to all stakeholders. All engineers, architects, and subcontractors on the project can operate with the latest data, wherever they are located in the world. You can also view a simulation of the construction schedule for better planning.

520.743.7554
info@computerdimensions.net
www.computerdimensions.net
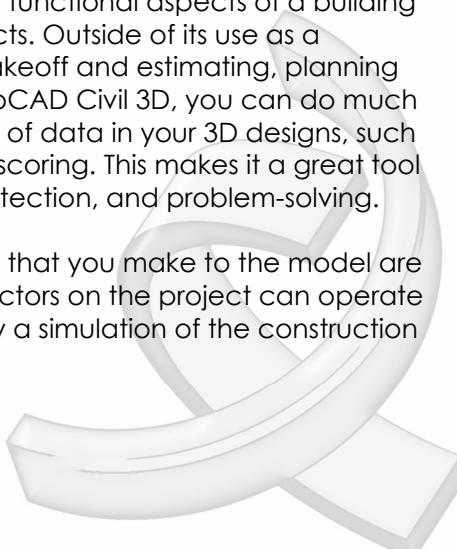
Digital twin technology is a concept that creates a virtual model of a building using sensors, drones, and IoT to gather data on a completed building or one under construction. That data is then processed using AI software, advanced analytics, and machine learning to create the virtual model and continuously learn from the real building. This can be used to improve project scheduling, create data-rich as-built, and be used in building operation systems once the project is completed.

Augmented Reality and Virtual Reality
Augmented and virtual reality are both emerging technologies for the construction industry that are on the rise in terms of both development and adoption. The immersive visualization made possible by VR paired with BIM is improving design, collaboration, and communication and allowing architects to better showcase their design to clients. Most virtual reality applications in construction are using BIM models as the basis to create virtual environments which will aid in eliminating change orders and clash detection prior to commencing construction. VR technology brings immense benefits for safety training and equipment operator training. Workers can learn to operate specialized machinery in a safe environment, as well as train to deal with challenging work circumstances. VR like IrisVR's tool are being widely adopted in conjunction with BIM and 3D projects.

In VR simulations, the whole environment is computer-generated and people can interact with it through special devices. In comparison, augmented reality (AR) superimposes interactive visualizations onto the real-world environment, which enhance the person's experience. With AR, you can improve on-site safety while you're at the jobsite. Employees can use AR equipment to check for hazards and ways to avoid them. For example, with Trimble Connect's HoloLens hard hats, workers can review safety checklists for specific work areas while in their protective gear.

Modular, Offsite and Prefab Construction
Modular and prefabricated offsite construction is becoming common practice today. It's similar to producing equipment in a factory and then using it on site. When executed correctly, offsite construction eliminates many of the inefficiencies found on a typical jobsite. This also makes it ideal for use during, and after, a pandemic as owners may look to ramp up construction quickly as economic conditions improve. Offsite construction is eco-friendly, boosts productivity and maximizes the use of materials.

Modular construction is one of the typical offsite options. It entails the building of modules that are then transported and installed on the construction site. You can use these modules to assemble larger units with higher efficiency, higher speed, and with fewer resources. The other common offsite construction is prefabrication, where components such as wall panels, framing, and floor systems are made off site, and then integrated into the projects. 3D printing is often used for prefabricated items. This is faster and more efficient than building them on site.

Artificial Intelligence
AI is not only reserved for tech giants. It's already being used in the construction industry to process large amounts of business data and inform future activities. Based on AI, you can identify the best ways to optimize your planning and processes, and to improve productivity as well as safety. AI can track tools, materials, and equipment. You can embed sensors on objects and in workers' apparel to track movement and usual routes. With the data from field observations, you can reorganize your jobsite to maximize efficiency.

AI can also contribute to the identification and prevention of errors. Using machine learning algorithms, AI can check the quality of excavation, plumbing, and electrical work with high precision. AI can also show if the installed systems are not compliant with the initial models and planning.